CLAIMS

1. An apparatus for rehabilitation, comprising:

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- an object adapted to be hand-held by a person and manipulated using the fingers to perform a task; and
 - a fine motion mechanism coupled to said object and adapted to apply sufficient force to move the object.
- 10 2. An apparatus according to claim 1, wherein said apparatus weighs less than 30 kg.
 - 3. An apparatus according to claim 1 or claim 2, wherein said object is adapted to be translated along a surface.
- 15 4. An apparatus according to claims 1-3, wherein said mechanism has a range of motion of less than 20 cm.
 - 5. An apparatus according to any of claims 1-4, and comprising a controller that analyzes motion of the object to determine at least one characteristic of the person.

6. An apparatus according to any of claims 1-5 wherein the controller analyzes force applied to the object to determine at least one characteristic of the person.

- 7. An apparatus according to claim 5 or claim 6 wherein the characteristic comprises an emotional state of the person.
 - 8. An apparatus according to any of claims 5-7 wherein said controller has stored therein patterns of motions.
- 30 9. An apparatus according to claim 8, wherein said patterns include writing patterns.
 - 10. An apparatus according to any of claims 1-9, wherein said fine motion mechanism resists motion of said object by the person.

11. An apparatus according to any of claims 1-10, wherein said fine motion mechanism applies resistance to motion of said object.

- 12. An apparatus according to any of claims 1-11, wherein said fine motion mechanism assists with the movement of said object.
 - 13. An apparatus according to any of claims 1-12, wherein said object is equipped with at least one feedback source which imparts a stimulus to a user of the apparatus.
- 10 14. An apparatus according to any of claims 1-13, further at least one sensor to track motion of said object.
 - 15. An apparatus according to any of claims 1-14, further comprising at least one sensor to track force applied to said object.
 - 16. An apparatus according to any of claims 1-15, wherein mechanism damps motion of said object.
- 17. An apparatus according to any of claims 1-16, comprising a gross motion mechanism adapted to move said fine motion mechanism, in at least 2 degrees of freedom.

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- 18. An apparatus according to claim 17, wherein said gross motion mechanism is adapted to move said object from a table to a mouth of a patient.
- 25 19. An apparatus according to claim 18, wherein said object comprises a chopstick.
 - 20. An apparatus according to any of claims 1-19, comprising a separate gross motion mechanism adapted to be attached to a person having said fingers and whose movement is coordinated with movement of said object.
 - 21. An apparatus according to any of claims 1-20, comprising a surface for said object to touch and which surface also functions as a display.
 - 22. An apparatus according to claim 21, wherein said surface comprises a tablet computer.

23. An apparatus for rehabilitating motor control functions related to writing, comprising: a surface;

- a stylus extending upwards from the surface; and
- a motion mechanism located under the surface that is adapted to change the orientation of the pen relative to the surface.
 - 24. An apparatus according to claim 23, wherein said motion mechanism is adapted to move said stylus on said surface.

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- 25. An apparatus according to claim 23, wherein said motion mechanism is adapted to be moved by a person holding the stylus.
- 26. An apparatus according to any of claims 23-25, wherein said apparatus is adapted to measure a force applied to said stylus.
 - 27. An apparatus according to any of claims 23-26, wherein said apparatus comprises a controller having at least one pattern of motion stored therein.
- 20 28. An apparatus according to claim 27, wherein said controller controls said motion mechanism responsive to said pattern.
 - 29. An apparatus according to claim 27, wherein said controller measures a mental state of a patient responsive to motion of said motion mechanism.

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- 30. A method of fine motor control rehabilitation, comprising:

 providing an object to be manipulated by fingers of a patient; and
 controlling an actuator coupled to the object to provide assistance to movement of the
 object, said actuator providing a range of motion to the object limited to less than 30 cm and
 having at least 3 degrees of freedom of motion.
 - 31. A method according to claim 30, wherein said assisted motion comprises writing.
 - 32. A method according to claim 30, wherein said assisted motion comprises eating.

33. A method of assisting a person in a daily task that involves controlling arm and finger motion comprising:

determining at least one characteristic of the task; and using a robotic actuator to assist arm and/or finger motion.

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- 34. A method according to claim 33, comprising assisting only if said act fails to complete.
- 35. A method according to claim 33, comprising assisting as a safety measure.
- 36. A method according to claim 33, comprising assisting periodically as part of a rehabilitation process.